

E. Remarks

The claims are 1-7 and 9-16, with claim 1 being the sole independent claim. Claims 4-6 have been withdrawn from consideration. Claim 8 has been cancelled. Claim 1 has been amended to better define the present invention, according to the disclosure in the specification.¹ Claims 2 and 3 have been amended solely to improve their form. The specification and the abstract have been amended to correct several informalities, including typographical, grammatical and syntax errors. No new matter has been added. Reconsideration of the claims is expressly requested.

The Examiner required Applicants to affirm a previously made oral election. Applicants hereby affirm the election.

The Examiner indicated in the Office Action that none of the certified copies of the foreign priority documents have been submitted. Since Applicants filed such documents on November 26, 2003, acknowledgment of their receipt is respectfully requested.

The specification and the abstract are objected to because of minor informalities. Since Applicants have corrected the informalities, withdrawal of these objections is respectfully requested.

Claims 2 and 11-14 have been rejected under 35 U.S.C. § 112, first paragraph, as being allegedly not enabled. Claims 1-3 and 7-16 have been rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite.

¹/ Applicants note that a spacer is a functional group for connecting a ligand with a substituent.

Specifically, the Examiner has alleged that in order to determine whether a particular device meets the limitations of claim 2 and one or more of claims 11-14, one would have to test devices for various luminescence characteristics utilizing various combinations of first and second compounds and would have to test devices for various luminescence characteristics utilizing various concentrations of compounds of formula (1), which have no substituent in A/A' or B/B'. The Examiner is of the opinion that due to the vast number of possible compounds and the limited experimental disclosure in the specification, a determination of maximum luminescence and efficiency requires undue experimentation. Applicants respectfully disagree.

As a matter of law, "a considerable amount of experimentation is permissible, if it is merely routine, or if the specification . . . provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed." In re Wands, 8 U.S.P.Q.2d (BNA) 1400, 1404 (Fed. Cir. 1988). Applicants respectfully submit that the amount of experimentation required to practice the claimed invention is not undue and is merely routine.

Applicants respectfully submit that a skilled artisan can determine the maximum values, because the units of maximum luminance, current efficiency, and power efficiency are clearly defined in tables 3, 5 and 6 as candelas per unit area (cd/m²), candelas per unit current (cd/A), and lumens per unit power (lm/W), respectively. These values are determined upon applying an electric field, as disclosed in the specification at page 51, lines 24-27, page 56, lines 20-24, and page 57, lines 18-22.

With respect to the concentration at which maximum luminance is achieved, the present invention is characterized in that a specific phosphorescent organic

compound is used at a high concentration of at least 8 wt.% in a luminescent layer of an EL device. The concentration of at least 8 wt.% is merely a value, which is generally regarded to represent a high level of concentration for a phosphorescent material (see page 9, lines 8-14). Thus, Applicants believe that it is not material to determine the concentration at which maximum luminescence is achieved in the present invention.

Further, claim 1 has been amended to delete the term “non-luminescent” in connection with the first organic compound, for clarification. Specifically, claim 1 is intended to recite a combination of a first and a second organic compounds, of which only the second compound is expected to be a luminescent material (at a concentration of at least 8 wt. %). The first organic compound is not expected to act as a luminescent material and should not be interpreted as such in the context of the claimed invention, even if this compound is capable of emitting light.

Also, claim 2 has been amended to clarify that there may be a substituent in A/A' if there is no substituent in B/B', and vice versa. Accordingly, Applicants respectfully submit that the present claims fully comply with the requirements of 35 U.S.C. § 112. Thus, the above rejections should be withdrawn.

Claims 1-3, 7-9 and 11-16 stand rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent Application Publication No. 2002/0121638 A1 (Grushin). Claims 1-3, 7, 8 and 11-16 stand rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent Application Publication No. 2002/0055014 A1 (Okada). Claims 1-3, and 7-16 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from Grushin or Okada. Claims 1-3, and 7-16 stand rejected under 35 U.S.C. §

103(a) as being allegedly obvious from U.S. Patent Application Publication No. 2002/0019782 A1 (Igarashi). These rejections are respectfully traversed.

Okada is directed to light-emitting devices and materials used therein. Okada discloses ortho-metallated metal complexes on pages 76 and 77 and provides numerous examples thereof on pages 77-83. Applicants respectfully submit that Okada fails to disclose or suggest the compounds as presently claimed. Okada contains an extremely broad disclosure of possible compounds, numbering in thousands. While it is possible to, for example, arrive at the presently claimed ligands based on the generic structure (K-II), Okada fails to teach or suggest selecting such a structure and substituting it as presently claimed.

The M.P.E.P. states:

[w]hen the compound is not specifically named, but instead it is necessary to select portions or teachings within a reference and combine them, e.g., select various substituents from a list of alternatives given for placement at specific sites on a generic chemical formula to arrive at a specific composition, anticipation can only be shown if the classes of substituents are sufficiently limited or well defined. M.P.E.P. § 2131.02.

As a matter of law, in order for a reference to anticipate a claim, its disclosure must “‘clearly and unequivocally’ direct[] those skilled in the art” to make the selection Applicants have made. In re Arkley, 172 U.S.P.Q. (BNA) 524, 526 (C.C.P.A. 1972). There is no anticipation, for example, if a reference presents dozens of choices without

highlighting the claimed substituent and disclosing the claimed ratio. See In re Kollman, 201 U.S.P.Q. (BNA) 193 (C.C.P.A. 1979). With respect to obviousness, “a reference must be considered not only for what it expressly teaches, but for what it fairly suggests.” In re Baird, 29 U.S.P.Q.2d (BNA) 1550, 1552 (Fed. Cir. 1994); In re Bruckel, 201 U.S.P.Q. (BNA) 67, 70 (C.C.P.A. 1979). Thus, to render the claims obvious, a reference must teach or fairly suggest what Applicants have done. It is respectfully submitted that Okada meets none of these requirements.

Okada discloses thousands of possible compounds and substituents. Even among the preferred substituents mentioned in paragraph [0209], there are thousands of possible resulting compounds, which are outside the scope of the present claims. In fact, from the numerous structures exemplified in this document, none are within the scope of the present claims. Combined with the fact that in addition to these substituents, the ligands must also be selected, it is clear that such a selection disqualifies Okada as a reference affecting the patentability of the presently claimed invention. Thus, in view of the specificity with which the presently claimed compounds are substituted (i.e., mandatory substituents selected from a)-c) in claim 1), it is respectfully submitted that the generic disclosure in Okada cannot affect the patentability of the presently claimed invention, as a matter of law.

Igarashi, which is directed to light-emitting materials, cannot affect the patentability of the presently claimed invention for the same reasons as Okada. Igarashi generically discloses organometallated Ir(III) complexes, but fails to meet the requirements of a reference, which can either anticipate the present claims or render them unpatentable.

Specifically, Igarashi provides a list of possible substituents R¹¹ and R¹² on pages 20-21, which spans more than one column. Hundreds, if not thousands, of possible substituents, which result from different cited permutations based on the disclosure in Igarashi, are outside of the scope of the present claims. Clearly, by simply reciting a large laundry list of possible substituents Igarashi cannot anticipate the present invention, which requires that at least one specific substituent be present. See In re Wiggins, 179 U.S.P.Q. (BNA) 421, 425 (C.C.P.A. 1973).²

Furthermore, even among the preferred groups mentioned in paragraph [0116], there are numerous compounds, which are outside the scope of the present claims, and there is no guidance to select what is specifically claimed. Applicants note that a mere mention of an alkyl group is insufficient to affect the patentability of the present invention, which specifies that the alkyl group has 2 to 20 carbon atoms, which said alkyl group includes one or non-neighboring two or more methylene groups that are replaced with -O-, -S-, -C(O)-, -C(O)-O-, -O-C(O)-, -CH=CH- or -C≡C-. The same is true with regard to a recitation of an aryl or an aromatic group, because claim 1, as amended above, specifies that an aromatic cyclic group has a substituent selected from the group consisting of a halogen atom, a cyano group, a nitro group, and a linear or branched alkyl group having 1 to 20 carbon atoms, which said alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -C(O)-, -C(O)-O-, -O-C(O)-, -CH=CH- or -C≡C- via an alkyl group spacer, which said spacer alkyl group

²/There can be no anticipation where the reference is so broad that the likelihood of arriving at the claimed invention would be the same as discovering the combination of a save by an inspection of its dials. See Ex Parte Garvey, 41 U.S.P.Q. (BNA) 583 (P.O.B.A. 1939).

can include one or non-neighboring two or more methylene groups that can be replaced with $-O-$, $-S-$, $-C(O)-$, $-C(O)-O-$, $-O-C(O)-$, $-CH=CH-$ or $-C\equiv C-$. Accordingly, Applicants respectfully submit that the presently claimed invention is patentable over Igarashi.

Grushin is directed to electroluminescent iridium compounds and devices made with such compounds. Specifically, Grushin discloses cyclometallated Ir(III) compounds having various fluorinated substituents. Applicants respectfully submit that Grushin does not disclose or suggest the second organic compound substituted as presently claimed.

While Grushin states in paragraph [0039] that its cyclometallated Ir(III) compounds can also be substituted with conventional substituents for organic compounds, such as alkyl, alkoxy, halogen, nitro, and cyano groups, as well as fluoro, fluorinated alkyl and fluorinated alkoxy groups, like in Okada and Igarashi, this is not a sufficient disclosure to affect the patentability of the present invention. As mentioned above with respect to Igarashi, this list includes hundreds, if not thousands, of possible substituents outside the scope of the present claims. Also, a mere mention of an alkyl group is insufficient to affect the patentability of the present invention, which specifies that the alkyl group has 2 to 20 carbon atoms, which said alkyl group includes one or non-neighboring two or more methylene groups that are replaced with $-O-$, $-S-$, $-C(O)-$, $-C(O)-O-$, $-O-C(O)-$, $-CH=CH-$ or $-C\equiv C-$. Grushin does not “‘clearly and unequivocally’ direct[] those skilled in the art” to make the selection Applicants have made and cannot anticipate the present invention. In re Arkley, 172 U.S.P.Q. at 526.

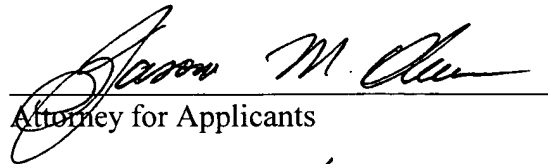
With respect to obviousness, as a matter of law, a disclosure of a vast number of compounds does not automatically render a claim obvious, particularly when the disclosure indicates a preference leading away from the claimed compounds. See In re Baird, 29 U.S.P.Q2d (BNA) at 1552. In In re Baird, the Federal Circuit reversed the decision of obviousness by the Board of Patent Appeals and Interferences stating that in view of a large generic disclosure and the fact that the compounds that the prior art reference identified as “typical”, “preferred” and “optimum” were different from the claimed compounds, the prior art reference could not be considered to teach or fairly suggest the claimed compounds. See id.

The situation in the present case is clearly similar to that in In re Baird. Specifically, Grushin states in paragraph [0039] that the preferred iridium compounds have only specific fluorinated substituents, none of which are those required in claim 1, as presently amended. Since Grushin discloses a vast number of compounds and none of its preferred compounds are within the scope of the present claims, it is respectfully submitted that Grushin, as a matter of law, does not teach or fairly suggest the claimed invention. Therefore, the presently claimed invention is patentable over Grushin.

In conclusion, it is respectfully submitted that the cited references, whether considered alone or in any combination, do not disclose or suggest the combination of elements presently claimed. Wherefore, Applicants respectfully request that the outstanding objections and rejections be withdrawn and that the present case be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



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